DOCUMENT RESUME

ED 172 114 CG 013 557

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TITLE Expectancy and the Menstrual Cycle: Effects on Performance and Self-Perception.
PUB DATE [73]
NOTE 13p.; Not available in paper copy due to marginal legibility of original document

EDRS PRICE MF01 Plus Postage. PC Not Available from EDRS.
DESCRIPTORS College Students; *Expectation; *Females; *Perception; *Performance Factors; *Physiology; *Self Concept; Task Performance
IDENTIFIERS *Menstrual Cycle

ABSTRACT

The impact of false information concerning the effect of the menstrual cycle on test performance and subjects' perception of the adequacy of that performance were investigated. Women (N=65) were studied either during the premenstrual or midcycle phase. Subjects were given one of three interpretations: (1) they should do well because of their present menstrual phase; (2) they should do poorly; or (3) some women do well, and some do poorly in their present phase. Results of the test performance indicated that bogus information about the menstrual phase influenced perception of performance, but not performance itself. (Author)

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EXPECTANCY AND THE MENSTRUAL CYCLE: EFFECTS ON PERFORMANCE AND SELF-PERCEPTION

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The present study examined how false information concerning the effect of the menstrual cycle on test performance influenced actual test performance and subjects' perception of the adequacy of that performance. Sixty-five women were studied either during the premenstrual or midcycle phase. Subjects were given one of three interpretations: (1) they should do well because of their present menstrual phase; (2) they should do poorly; or (3) some women do well, and some do poorly in their present phase. Test performance indicated that bogus information about the menstrual phase influenced perception of performance, but not performance itself.

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EXPECTANCY AND THE MENSTRUAL CYCLE:
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STATEMENT OF PROBLEM

Behavioral and affective changes have been reported across the menstrual cycle (Southam and Gonsoga, 1965). Generally these changes are considered the result of normal hormonal fluctuations. (Bardwick, 1971). Several studies, however, question whether these changes are directly related to physiological fluctuations (Paige, 1969; Parlee, 1973; Seward, 1944; Sommer, 1971), asking instead whether these changes are mediated by psychological factors, including stereotypic beliefs about how the menstrual cycle affects women (Parlee, 1973). To test this hypothesis, the present study was designed to determine whether a specific behavior -- test performance-- and self-perception of the adequacy of that behavior, could be altered if women were given false information regarding the influence of their menstrual cycle on performance. Additionally, the study inquired which women might be more influenced by the expectancy manipulation. It was predicted that (1) women who expect to do poorly on the experimental tasks will perform less well than women who either expect to do well or have no performance expectancy, and (2) women who score on the Rotter I-E scale ("externals") will be more affected by the experimental manipulation than women who score low ("internals"). No predictions were made for self-perceptions of the adequacy of performance.

SUBJECTS

Sixty-five paid women volunteers participated in this study. Data from 61 subjects was analyzed; follow-up data indicated that three women had irregular cycles during the time the study was undertaken and therefore had been assigned to the wrong condition. The data from an additional subject was discarded because she had guessed the true purpose of the study.

Subjects varied in age from 18 to 32, with a mean age of 20.7. Sixty-one subjects were single, three were married, one was separated. Sixty-one subjects were students, four worked full-time.

PROCEDURE

Recruitment. Subjects were recruited from seminars on Human Sexuality, at walk-through exhibits on birth control at Rutgers University, and from a psychology class at Rutgers College. All potential subjects were told that the study was designed to examine how women were affected by their menstrual cycle and that they would be paid five dollars for one and a half hours of their time. They were qualified if they were 18 to 35 years of age, had not been on medication for the last three months, had not been pregnant during the last three months and, most importantly, had fairly regular menstrual cycles with no more than one to two days variation and, preferable, 24 to 35 day cycles.

Testing. Subjects who met all selection criteria were contacted by phone by the experimentor to schedule the testing session. Subjects were given a date which corresponded to either their

midcycle phase (approximately 14 days prior to the beginning of their next menstrual flow) or their premenstrual phase (approximately one to five days prior to their next menstrual flow). Subjects were randomly assigned to either phase.

Subjects were tested singly. After arriving at the experimental laboratory, subjects were escorted to the testing room. At that time, an EEG band was placed on the subject's forehead. Taped instructions reiterated that the study was examining physiological fluctuations concurrent with certain tests. Subjects completed a Health Information Questionnaire, the Internal-External Questionnaire, the Moos Menstrual Distress Questionnaire, and two perceptual motor tests (Aiming and Visualization; from Moran and Mefferd, 1959). After taking these tests, subjects were given one of three interpretations of these data: one group was told they should do well because of their present menstrual phase; another was told they should do poorly; and those in another were informed that some women do well and some do poorly in their present menstrual phase.

Following the presentation of bogus expectancy for performance instructions, subjects filled out a manipulation check, e.g., a rating of how well they do on tests in general and how well they expect to do on tests today. Subjects then took 4 different tests: alternative forms of the perceptual-motor tasks taken prior to the bogus expectancy instructions; one subtraction task; and a persistence task which required the tracing of the outlines of 4 puzzles -- two

of which were insoluble while two were soluble. After having taken the tests, subjects completed a post-experimental questionnaire which asked them to evaluate the adequacy of their performance (including how good, satisfied, and comfortable they felt while taking each test) as well as to attribute responsibility for their performance (to test, ability, menstrual phase and luck). Subjects were then debriefed. Later, they were called to verify the start of their next menstrual flow.

RESULTS

Analyses of variance indicated that overall performance on the post-tests was not affected by the experimental manipulation nor was it associated with scores on the Internal-External Scale. Instead, post-test scores were related to pre-test (ability) scores. No difference in performance was observed between menstrual phase groups. Subject's self-perception of test performance, however, was related to the expectancy condition. Subjects who were told that their menstrual phase was correlated with poor performance evaluated their performance significantly worse than subjects who were told that their phase was associated with improved performance. Subjects were also asked to evaluate, for each test, how good they felt about their performance; how satisfied they felt about their performance; and how comfortable they felt while taking the tests. Overall self-evaluation was also significantly influenced by the expectancy manipulation.

Analyses of covariance indicated that actual test scores accounted for a portion of the variance of subjects' perception of performance on those tests from which subjects had some objective criterion,

such as prior experience (subtraction), and number of attempts to solve the task (puzzle). In more ambiguous, novel tasks (i.e. Aiming and Visualization), test scores were not related to perception of performance. In addition, subjects' attribution to the test or ability was influenced by the expectancy condition whereas attribution to luck or to menstrual phase was negatively related to Internal-External scores and positively related to subjects' rating of interference in school and work performance by menstrual phase (Question #4 on Moos Menstrual Distress Questionnaire). Further, premenstrual women attributed performance to menstrual phase more frequently than midcycle women. Finally, subjects' self-perception of performance was assessed by asking them to predict their performance during the next menstrual cycle. In general, women predicted that their performance would be best during midcycle and luteal phases - between ovulation and the premenstrual phase and worst during premenstrual and menstrual phases. Only women in the poor expectancy group predicted that their performance would be significantly different in each of the four subsequent phases.

The results indicate that women used different information by which to reflect performance on each test. While self-perception was influenced by the experimental manipulation on all tests, subjects' own ability and prior experience influenced self-perception of performance only on familiar tasks. Self-perception on novel tasks was solely influenced by the bogus information. (Actual data is available upon request).

DISCUSSION

The results of the present study indicate that false information on the menstrual cycle's effect on performance ("menstrual myths") influenced women's self-perception but not their actual performance on a series of tests. One implication of this unexpected finding is that menstrual myths may serve as a standard by which women evaluate themselves, causing them, particularly in new situations, to incorrectly perceive the adequacy of their behavior. If this false belief goes unchallenged, some women may choose to avoid these situations in order to avoid risking failure. While it would appear that women may be more easily affected by menstrual myths if they believe that control over the consequences of their behavior resides in the environment, this hypothesis was not confirmed in the present study. Externals differed from internals in the present study only in the attribution of responsibility for the cause of their performance to menstrual phase. These results do suggest, however, that expectancy for change is more salient for women who are premenstrual than who are midcycle. Interestingly, although women expected to do worst during the premenstrual phase, no differences in performance was actually observed among menstrual phase groups.

While this study did not demonstrate that expectancy for change accounts for purported menstrual-related behavior changes, its data do seriously question the reliability of self-perceptions of these changes. Future studies on menstruation need to record both observable behavior as well as self-reports of behavior in order to more fully understand the relative contributions of expectancy for change and physiological fluctuations on behavior associated with the menstrual cycle.

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Table I. Self-Perception Means for Expectancy Conditions

Expectancy Condition[1]	PERCEPTION			
	Evaluation	Felt Good	Satisfaction	Comfort
Poor	3.28	3.16	3.28	3.48
Mixed	3.76	3.76	3.79	3.99
Well	4.33	4.30	4.13	4.54

[1]significant difference ($p. < .05$)

Table II. Self-Perception Means for Menstrual Phase Conditions

Menstrual Phase[1]	PERCEPTION			
	Evaluation	Felt Good	Satisfaction	Comfort
Midcycle	3.62	3.56	3.62	3.90
Premenstrual	3.98	3.94	3.86	4.12

[1]significant difference ($p. < .05$)

Table III. Test Performance Means for Menstrual Phase Conditions

Menstrual Phase	TESTS			
	Visualization	Aiming	Subtraction	Puzzles
Midcycle	78.1	207.2	7.5	5.1
Premenstrual	78.0	194.1	6.6	5.4
	N.S.	N.S.	N.S.	N.S.

Table IV. Test Performance Means for Expectancy Condition

Expectancy Condition	TESTS			
	Visualization	Aiming	Subtraction	Puzzles
Poor	76.2	200.4	7.1	5.1
Mixed	79.2	205.5	8.4	5.2
Well	78.7	196.6	5.8	5.4
	N.S.	N.S.	N.S.	N.S.